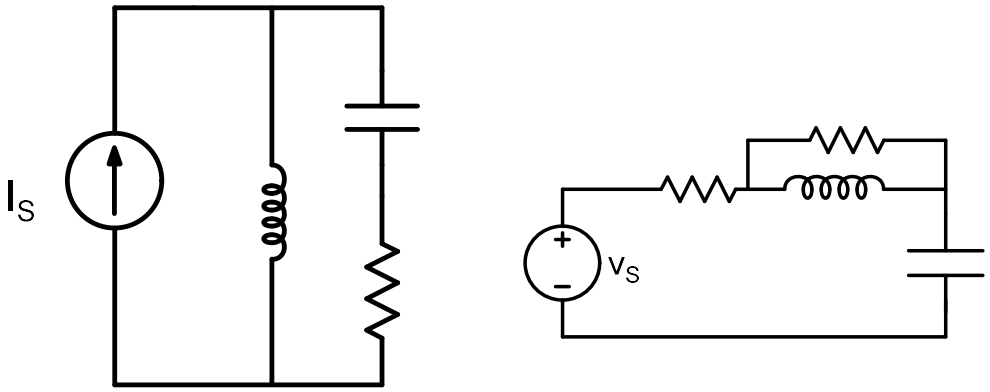
ESC201T: Introduction to Electronics

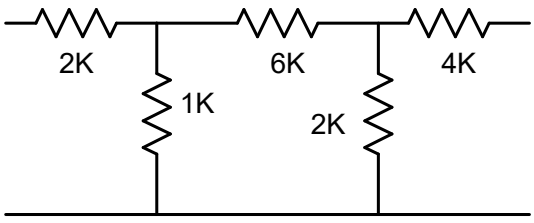
HW -6 **Date: 20.10.2020**

Q.1 Determine unity power factor frequencies for the circuit shown below



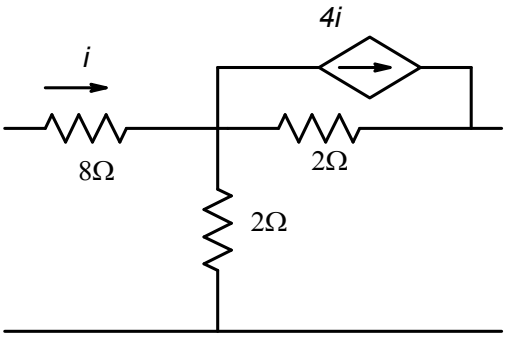
Q.2 Q.1 Design a bandstop (or a notch filter) to remove a 50Hz noise from a 60Hz signal using a series RLC circuit. Assume L = 1H. The attenuation of 60Hz signal should be less than 3dB

Q.3 Determine Z, Y, H and G parameters for the circuit shown below

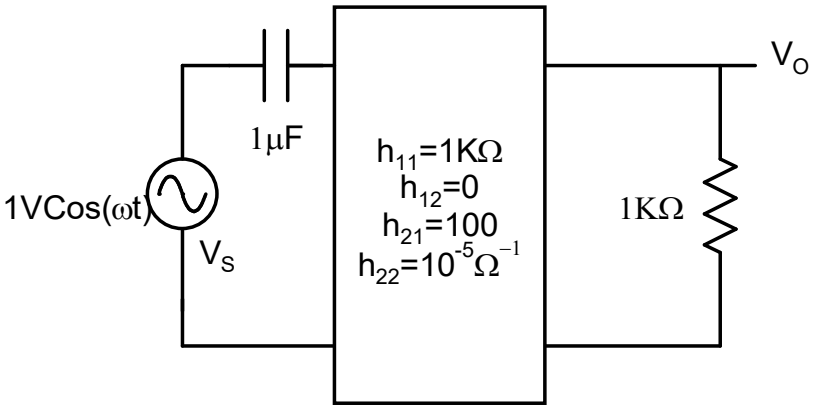


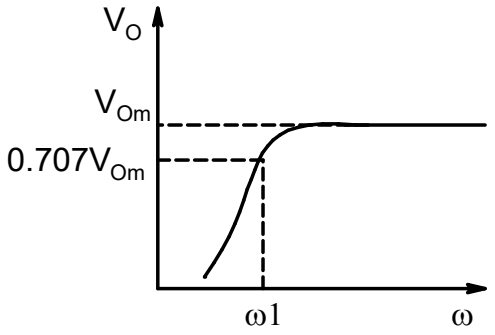
Q.4 Stating from the definition of a reciprocal network, show that $h_{21} = h_{12}$

Q.5 Determine the Y parameters for the circuit shown below

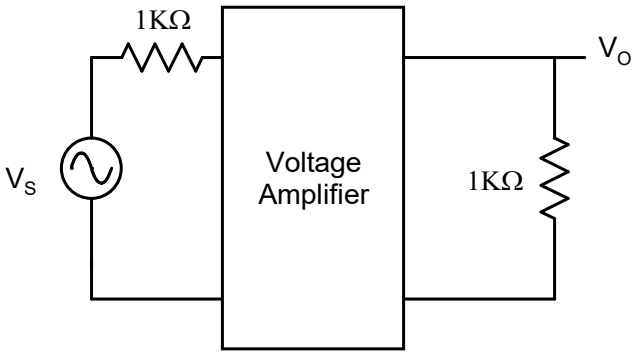


Q.6 For the circuit shown below on the left, the variation of magnitude of output voltage with frequency is shown on the right. Determine the voltage V_{om} and frequency $\omega 1$.





Q.7 The two port network shown below is a voltage amplifier. One can design the amplifier for different values of z parameters under the constraint $\frac{z_{21}}{z_{22}} = 10^2$ and z_{12} = 0. Determine suitable values for the z parameters such that voltage gain $\frac{V_O}{V_S}$ is maximized.



Q.8 Determine the values of h_{11} and h_{22} for the amplifier shown below such power delivered to the load is maximized